

**microwriter**

# **GENERAL SYSTEMS MANUAL**



## **BOOK II**

# THE MICROWRITER USER'S HANDBOOK

## NOTE

This edition of the Handbook (Book II) presumes a complete familiarity with all aspects of the Microwriter system covered in:

"The New User's Guide To The Microwriter" (Book I)

and therefore covers only those aspects of the system not covered in the Guide.

In line with its  
policy of continual  
product development  
Microwriter Ltd  
reserves the right to  
alter specifications  
without notice

© copyright not to be  
reproduced without the  
consent of Microwriter Ltd.  
May 1982

# TABLE OF CONTENTS

	Page No.
Varying the pre-set format system	1
Carriage return suppression	2
Descend to start of last line on page	3
Tape transfer verification	3
The third setting	4
The fourth setting	5
The Menu: General Points	6
List of Menu items	7
<hr/>	
Menu items - Formatting	8
- Variations of number of characters in line	8
- Automatic page length system	9
- Number of lines in form feed	10
- Menu exceptions - general	11
- Hex/ASCII/Decimal conversion table	12
- Underline start exception	13
- Underline end exception	13
- General purpose exception 1	14
- General purpose exception 2	14
- Underline repeat enable	16
- Line feed exception enable	17
<hr/>	
Menu items - Communications	18
- Line feed code	18
- Hard carriage return code	19
- Soft carriage return code	19
- Backspace code	20
- Up line code	20
- Baud rates Setting	21
- Bit format of serial output	22
- Parity settings	22
- Receive wait time	23
- ASCII setting enable	24
- Tape transmission check	24
<hr/>	
Loading default values	25
Microwriter's I/O status	26
- Sending Text	26
- Receiving Text	26
- Use as an alternative keyboard	26
- Single/Double line facility	26
RS232C Communications with the Microwriter	28

# VARYING THE PRE-SET FORMAT SYSTEM

As described in Book I, the tab slots are normally positioned at intervals of every 5 character positions across each line of print. These 'slots' are the 'default values'.

The 'slots' can be varied to conform precisely with the format you wish to adopt. In other words, if you want the first slot to be half way across the page, it means you do not have to use a number of **[T]** or **[ ]** to achieve this. Once set up, **[T]** and **[ ]** will respond by moving to the new 1st, 2nd and 3rd slots, etc., and not the standard default of every 5 character positions.

There is a very definite pattern to follow (if not, formatting problems will occur). You may revise the positions of as few or as many slots as you wish, up to a maximum of 15. The sequence is as follows:

1. Key a carriage return **[C]** and then key **[P][T]**. This command shows a  $\nabla$  sign on the display.

**[P][T] Position Tab Slot**

2. Shift into Numerics and enter the slot number as TWO DIGITS (ie 01 for slot No. 1).
3. Enter a PLUS or a MINUS depending on whether you wish to decrease or increase the slot position.
4. Enter the required number of increase or decrease character positions as TWO DIGITS (ie 01 is originally at position 05 – so 01 – 02 will position it at character position 3 and 01 + 07 will position it at character position 12).
5. ENTER A SPACE – DO NOT FORGET THIS, IT IS ESSENTIAL.
6. Repeat steps 2 to 5 (whilst still in numeric shift) as many times as required up to a maximum of 15 slots.
7. KEY **[P][T]** ONCE AGAIN, and a carriage return **[C]**.

Keying the final **[P][T]** is VITAL. It has the effect of implementing the changes. FAILURE to KEY **[P][T]** would result in the Microwriter continuing to attempt to modify its program, resulting in considerable disruption.

If, inside the same document, you wish to change the format again or return it to its original settings, you must repeat the whole operation **ALLOWING FOR THE NEW FORMAT**. For example, if slot 01 is now at 12, 01+02 will reset it to position 14 and 01-07 will return it to its original position of 05 – until further changed.

The Microwriter will obey the format you have set **FOR THAT DOCUMENT ONLY**. As soon as you use a document separator  $\nabla$  the new document will use the standard settings.

It is important to remember that, although the sequence of changes between the pair of  $\nabla$  signs does not print out, it **IS STILL PART OF THAT DOCUMENT** in as much as the text is in the Microwriter memory. This means that the changes you've made **WON'T** affect any text on memory **BEFORE** the point at which the changes were made. Also, if you wipe the document in which the changes were made, only the 'default values' will be retained.

## **Carriage Return Suppression**

The automatic carriage return system always triggers a carriage return/line feed at the closest space before 60 characters on a line.

Sometimes you may wish to write a longer line than normal which **WILL NOT** produce an automatic carriage return.

This can be done at any time by keying  $\square \text{C}$  **AT THE BEGINNING OF THE RELEVANT LINE**. This shows a  $\square$  on the display, and has the effect of cancelling the automatic system from that point onwards, until  $\square \text{C}$  is used once again to re-instate the automatic system again.

**CAUTION:** This facility should be used with care, since, if you forget to re-instate the automatic carriage return system, the printer may attempt to tackle a longer line than it can manage, resulting in all sorts of problems.

## Descend To Start Of Last Line On Page

If you are writing several pages and wish each page to be numbered at the same place at the end, it is not always possible to know how many lines are left at the bottom of a section of text, especially if only part of the page has been used.

The command is **P F** and shows a **↓** on the Microwriter display.

**P F** - Page Feed

**P F** written at the end of a piece of text will automatically count how many lines you have written, then subtract that number from the total number of lines allowed for the page (usually 60) and then automatically line feed to the end of the page.

If after the **P F** you then write a page number it will print at the end of the page.

## Tape Transfer Verification

If the Tape Error check system is not sufficient for your needs, you may also verify the tape transmission as described below.

Essentially, this checks whether or not the data on the tape 'looks' correct. It does not actually check it against any text in the Microwriter.

You must first set up the cassette recorder and Microwriter as if to read back the information. (The Microwriter should be positioned at the end of memory). However, instead of using **R** to 'read' from tape the command **H R** is used. For technical users the mnemonic for this is **H R** for Hamming Check Read. Then 'play' the tape as normal and the Microwriter will check the 'bits' of information on the tape. When finished, the Microwriter display will show TAPE ERROR = 000 (or will give you an error figure - or show POOR TAPE).

**Note:** This process only checks the data and does not actually read the text into the Microwriter.

Usually it is sufficient only to check the last section of the data - if that is all right, the chances are excellent that the rest is, too.

## The Third Setting

As indicated on page 41 of Book I, there is a third setting devoted to (usually) printable characters of the ASCII range, though this is usually only for technical use.

The 3rd setting access commands are governed by the same rules as for upper case alphabet and numerics:

The command to switch to third setting is **[P]** :

- **[P]** switches to 3rd setting for ONE CHARACTER ONLY.

- **[P P]** 'locks' into 3rd setting.

'p' is displayed on the right hand side for **[P]** , and 'P' for **[P P]** .

For convenience in the table below, the third setting characters available are related to the lower case alphabet equivalents, ie the same key combination is used in each case.

ALPHA.	3RD SET.	MW DISPLAY
a	↑	^
b	}	}
c	<	<
d	{	{
g	(Hex) 7E	⌞
i	(Hex) 7F	⌟
l	(Hex) 7C	
m	-	—
n	(Hex) 60	`
q	>	>
r	]	]
v	\	¥
w	[	[

The characters we have shown are typical of many printers. However, some printers substitute other characters such as fractions, £ or #, so it is worth experimenting with these characters.

## The Fourth Setting

In addition, there is a fourth setting devoted to the (usually) non-printable characters of the ASCII range.

These are 'control characters' and are usually used in amongst the text to command another piece of equipment as desired. For example, many word processors need a code to tell them to stop loading a section of text to disc.

These control codes, though, are potentially quite dangerous if, for example, you hit one by accident and then find this is the command the other piece of equipment needs to wipe all its memory!

So we have hidden an enable/disable feature in the menu selections later in this book. If you do wish to enable this setting refer to page 24.

Once enabled, you can use the command to switch to 4th setting **[H]** as for all the other settings:

- **[H]** switches to 4th setting for ONE CHARACTER ONLY.
- **[H][H]** 'locks' into 4th setting.

'a' (for ASCII) is displayed on the right hand side for **[H]** and 'A' for **[H][H]** (even if the menu setting has not been enabled - though the characters you key in will be ignored until it is enabled).

For convenience in the table below, the fourth setting characters are related to the lower case alphabet equivalents - the display will show the lower case letter but in each case it will be preceded by a raised dot in front of the letter. For further information cross-reference with page 12.

ALPHA.	4TH SET.	MW DISPLAY
SPACE	US	· ~
a	SOH	· a
b	STX	· b
c	ETX	· c
d	EOT	· d
e	ENQ	· e
f	ACK	· f
g	BEL	· g
h	BS	· h
i	HT	· i
j	LF	· j
k	VT	· k
l	FF	· l
m	CR	· m
n	SO	· n

ALPHA.	4TH SET.	MW DISPLAY
o	SI	· o
p	DLE	· p
q	DC1	· q
r	DC2	· r
s	DC3	· s
t	DC4	· t
u	NAK	· u
v	SYN	· v
w	ETB	· w
x	CAN	· x
y	EM	· y
z	SUB	· z
.	RS	· ~
,	FS	· ,
-	GS	· -
!	ESC	· !



# THE "MENU": GENERAL POINTS.

The "menu" is quite simply a list of those parts of the program within the Microwriter, controlling its functions which you can change if you wish.

The following page shows a list of these variable items, the particular "access command" needed to reach that menu selection, the "default value" (i.e. the entry normally held in the menu), and the page reference where the item is covered in detail.

## To Change A Menu Item

There is a STANDARD SEQUENCE of 5 steps to follow each time you wish to change an item:

1. Key **M N** to instruct the Microwriter to get ready to go to a menu item. "M" will be indicated on the right of the display.

**M N** - Menu Engage/Disengage

2. Key the "access command" for the particular item you want to change, as described in the following pages.

As soon as you have done this, the Microwriter display will show the menu item and a 3 digit display of the entry currently held.

3. "Zero" the current entry (i.e. clear it to 000) by keying the normal letter "c". (**Not C**).

**c** to Clear the entry.

4. Enter the new value you want as described in the detailed notes on the following pages.

It is not necessary to change your Microwriter to numeric setting to do this: it will automatically put in numbers.

It is VITAL to key in a three-digit number, even if the first one or two are zeroes.

5. Key **□** to "escape" from that particular menu item and use the next access command you need. If no further menu changes are needed, key **M N** once more to "disengage" from the menu and the "M" will disappear from the display.

For ease of reference, this "change sequence" is briefly summarised at each relevant section of this Handbook.

## List of Menu Items

Note: "Default Values"

The Default Values, i.e. those normally held in the Microwriter's program as shown below, are those normally appropriate for 10 pitch printing on a typical "daisy wheel" printer on A4 paper and 'standard' communications.

No	Access Command	Readout/Default	Meaning	Page number
1	[Y] [ ]	HARD CR = 013	Hard Carriage Return Code	19
2	[Y] [I]	SOFT CR = 013	Soft Carriage Return Code	19
3	[Y] [C]	CHARS/LINE = 060	Characters per Line	8
4	[Y] [D]	LF X ENAB. = 000	Line Feed Exception Enable/Disable	17
5	[Y] [K]	LF CODE = 010	Line Feed Code	18
6	[Y] [R]	BAUD RATE = 019	Baud Rate Setting	21
7	[ ] [F]	UL REPEAT = 000	Underline Repeat Enable	16
8	[Y] [F]	TX FRAME = 000	Bit Format of Serial Output	22
9	[Y] [H]	CONT. HEN. = 000	ASCII Setting Enable	24
10	[Y] [L]	LINES/PAGE = 060	Lines per Page	9
11	[ ] [F]	RX WAIT T = 008	Receive wait time	23
12	[Y] [ ]	B.S. CODE = 008	Backspace Code	20
13	[ ] [F]	TAPE ERROR = 000	Tape Transmission Check	25
14	[ ] [F]	*1 = 000	Unused Menu	-
15	[ ] [F]	*2 = 000	Unused Menu	-
16	[Y] [P]	PARITY O/E = 000	Odd/Even Parity	22
17	[H] [ ]	U.L X SC1 = 000	Underline Start Exception	13
18	[ ] [F]	U.L X SC2 = 000	"	"
19	[ ] [F]	U.L X SC3 = 000	"	"
20	[H] [D]	U.L X EC1 = 000	Underline End Exception	13
21	[ ] [F]	U.L X EC2 = 000	"	"
22	[ ] [F]	U.L X EC3 = 000	"	"
23	[H] [Y]	G.P.X1 C1 = 000	General Purpose Exception 1	14
24	[ ] [F]	G.P.X1 C2 = 000	"	"
25	[ ] [F]	G.P.X1 C3 = 000	"	"
26	[H] [L]	F.F. COUNT = 000	No. of Lines in Form Feed	10
27	[ ] [F]	*3 = 000	Unused Menu	-
28	[H] [ ]	UPLN CODE = 011	Up Line Code	20
29	[ ] [F]	*4 = 000	Unused Menu	-
30	[H] [W]	G.P.X2 C1 = 000	General Purpose Exception 2	14
31	[ ] [F]	G.P.X2 C2 = 000	"	"
32	[ ] [F]	G.P.X2 C3 = 000	"	"

The Menu items on the list above are in the order in which they appear in the Microwriter. If you start with item 1 ([Y] [ ]) and step Forwards using [F], each item will appear consecutively. You may also step back one at a time with [K].

However, for the purposes of this book, the items have been grouped into relevant sections. Any one item may be found by referring to its page number.

If you wish to reset ALL of the default values refer to page 25.

# MENU ITEMS – FORMATTING

A number of the menu items available govern the format your text takes. You have already covered the more basic facilities available in Book I and at the beginning of this Book. These are all accessed via the keyboard when writing. The following menu items will be 'fixed' until deliberately changed once again.

CHARS/LINE = 060
------------------

## Variation of Number of Characters in Line

To change:		
1.	<input type="checkbox"/> M	<input type="checkbox"/> N
2.	<input type="checkbox"/> Y	<input type="checkbox"/> C
3.	c	
4.	new entry	
5.	<input type="checkbox"/> -	<input type="checkbox"/> M <input type="checkbox"/> N

The automatic carriage return system will normally trigger a carriage return/line feed at the closest space before 60 characters on a line. (This is usually appropriate for 10 pitch printing on A4 paper).

In some circumstances, however, (such as the preparation of a table to be printed on wider paper) it is necessary to increase or reduce the "normal" line length by varying the character count of 60 held by the menu.

This is easily done by following the above "change procedure" so that the new entry shows the maximum number of characters you wish to be printed out on a line, e.g. 072.

As a rough guide, an A4 page loaded sideways into a printer (= "landscape format") will accommodate about 110 characters per line at 10 pitch printing. It is advisable, however, that you never exceed 130 characters on the line as this can create complications on some printers.

**Note** If line length is adjusted during the preparation of text and you then decide to print out a previous document, the previous text will also be reformatted.

## Lines Per Page/Automatic Page Length System

To change:	
1.	<div style="border: 1px solid black; display: inline-block; padding: 2px 5px;">M</div> <div style="border: 1px solid black; display: inline-block; padding: 2px 5px;">N</div>
2.	<div style="border: 1px solid black; display: inline-block; padding: 2px 5px;">Y</div> <div style="border: 1px solid black; display: inline-block; padding: 2px 5px;">L</div>
3.	c
4.	new entry
5.	<div style="border: 1px solid black; display: inline-block; width: 15px; height: 15px; vertical-align: middle;"></div> - <div style="border: 1px solid black; display: inline-block; padding: 2px 5px;">M</div> <div style="border: 1px solid black; display: inline-block; padding: 2px 5px;">N</div>

The automatic page length system operates as an automatic print halt system for simple pagination.

### General

The menu entry represents the number of lines the Microwriter will regard as the maximum to be printed on each page. The default value of 60 is normally appropriate for single spaced printing on A4 paper, but can be varied to any other number as above.

### Automatic Print Halt

The system will automatically stop the printer once the pre-set number of lines have been printed. If there is still more data on the Microwriter's memory before the next document separator, the  key (or any key combination which includes the  key, i.e. ANY command) will cause the printer to resume printing from the point it had reached and print another "page's worth" according to the menu setting.

Used in this way, the system represents a convenient way of printing a substantial amount of text without the necessity of dividing it up into individual pages beforehand.

**Note** If you have doubled the line spacing with 

M

N

X

 (see Page 26), then you do not need to reduce the number of lines per page held in the menu - it will take account of this automatically.

**Caution:** Remember that, after an automatic print halt, ANY command you may key will cause the printing to resume. If you wish to go back 'into' the text to make amendments (for example) FIRST press the space key (or any other non-command key) to "escape" from the printing system.

Having done so, it is then necessary to re-start the printing process from a document separator in the usual way.

continued

## Pagination

You can paginate in two ways: linked to a printer – or not.

1. Linked to a printer – when the printing stops automatically at the end of 60 lines (unless another page length has been set), you can interrupt the printing by hitting the SPACE key (not the ☐). Then go into insert in the Microwriter, put in a document separator ☐L, write your page number (remembering to position it) then write another ☐L. You may then step back a couple of characters and print the page number. Then insert a fresh sheet of paper, step forwards into the next page (now a new document) and print it as normal.
2. When not linked to a printer the print command ☐X will act as if it is printing, starting from a document separator it will 'search' forwards for 60 lines and then stop. If you wish it to carry on for a further 60 lines hit ☐. Otherwise if you wish to enter a page number hit the SPACE key (not ☐). This will effectively 'disengage' it, then go into insert and put a page number and document separator.  
Of course as the page is now longer than 60 lines, when printing, you need to hit ☐ to carry on when it stops before the page number.

F.F. COUNT = 000

## No. of Lines in Form Feed

To change:	
1.	<input type="checkbox"/> M <input type="checkbox"/> N
2.	<input type="checkbox"/> H <input type="checkbox"/> L
3.	c
4.	new entry
5.	<input type="checkbox"/> - <input type="checkbox"/> M <input type="checkbox"/> N

Form feed facility is needed when using continuous stationery in the printer.

Normally for A4 single sheet paper the Microwriter will interrupt the printer after 60 lines (as pre-set in Lines per Page menu – page 9) with the default value of 000 set in this menu item.

If you wish to use continuous stationery, count the number of lines needed to clear the perforated edge of the paper and load the number PLUS ONE in this menu item (i.e. – 28 lines + 1 = setting of 029). The printer will then stop printing after 60 lines, form feed 28 lines to the next sheet, and then restart printing from where it left off.

### Note:

1. Of course, if you have set the lines per page to anything other than 60, the form feed facility needs to be altered to compensate for this.

continued

2. If you have set this menu to 001 the printer will continue through all the text ignoring the lines per page setting.
3. This facility can be used in conjunction with **[P F]** (see page 3) when writing short pieces of text that need to be printed with continuous stationery. Write your text, then **[P F]**, then **[C]** then the next piece of short text, etc. The printer will then print the text descend to the 60th line, then form feed to the next page and print the next piece of text.

## Menu Exception Codes - General

There are four blocks of exception codes available for use. Normally they are all defaulted to 000 which means they have no effect on the printed result.

Each block of exception codes consists of three menu items. Each of these items can be set to a number which corresponds with the standard ASCII set of control codes. So, once set up in the menu, an assigned implementing code will trigger the group of three codes into action.

Exception codes are used for such facilities as underlining, bold type, condensed printing, expanded printing, and sub- or super-script.

The first step in the procedure is to find out what codes are needed for your printer, word processor or computer to implement one of these facilities. It will give you up to three ASCII codes. You then need to use the conversion chart on the next page to find out the 'numeric' equivalent.

Once you have found out this decimal setting you must access the exception menu you wish to use (see next pages) and set the 000 to the relevant numbers. If only one or two codes are required ENSURE that the remaining menu settings of that block are set to 000 - so that it does not interfere with the process.

Then come out of menu, and write your text as normal. When you come to a section where you wish to implement the facility, you can do so with the implementing code.

The exception menu access commands are dealt with on the next pages, but only show the first setting available. In order to set the second and third sections you must jog forwards with **[F]**. The section you are in is indicated by the appearance of a number (1, 2 or 3) in the readout:

i.e. U.L. X SC1 = 000

U.L. X SC2 = 000

U.L. X SC3 = 000

## Hex/ASCII/Decimal Conversion Table

Microwriter's menu settings use numbers which are the decimal version of the ASCII or Hex. codes used by other equipment. If you want to know the decimal equivalent of these codes (for example, for the exception menu items) just use the table below.

HEX	ASCII	DEC.
00	NUL	0
01	SOH	1
02	STX	2
03	ETX	3
04	EOT	4
05	ENQ	5
06	ACK	6
07	BEL	7
08	BS	8
09	HT	9
0A	LF	10
0B	VT	11
0C	FF	12
0D	CR	13
0E	SO	14
0F	SI	15
10	DLE	16
11	DC1	17
12	DC2	18
13	DC3	19
14	DC4	20
15	NAK	21
16	SYN	22
17	ETB	23
18	CAN	24
19	EM	25
1A	SUB	26
1B	ESC	27
1C	FS	28
1D	GS	29
1E	RS	30
1F	US	31
20	space	32
21	!	33
22	"	34
23	#	35
24	\$	36
25	%	37
26	&	38
27	'	39
28	(	40
29	)	41
2A	*	42

HEX	ASCII	DEC.
2B	+	43
2C	,	44
2D	-	45
2E	.	46
2F	/	47
30	0	48
31	1	49
32	2	50
33	3	51
34	4	52
35	5	53
36	6	54
37	7	55
38	8	56
39	9	57
3A	:	58
3B	;	59
3C	<	60
3D	=	61
3E	>	62
3F	?	63
40	@	64
41	A	65
42	B	66
43	C	67
44	D	68
45	E	69
46	F	70
47	G	71
48	H	72
49	I	73
4A	J	74
4B	K	75
4C	L	76
4D	M	77
4E	N	78
4F	O	79
50	P	80
51	Q	81
52	R	82
53	S	83
54	T	84
55	U	85

HEX	ASCII	DEC.
56	V	86
57	W	87
58	X	88
59	Y	89
5A	Z	90
5B	[	91
5C	\	92
5D	]	93
5E	^	94
5F	_	95
60	`	96
61	a	97
62	b	98
63	c	99
64	d	100
65	e	101
66	f	102
67	g	103
68	h	104
69	i	105
6A	j	106
6B	k	107
6C	l	108
6D	m	109
6E	n	110
6F	o	111
70	p	112
71	q	113
72	r	114
73	s	115
74	t	116
75	u	117
76	v	118
77	w	119
78	x	120
79	y	121
7A	z	122
7B	{	123
7C		124
7D	}	125
7E	~	126
7F	DEL	127

U.L. X SC1 = 000
U.L. X SC2 = 000
U.L. X SC3 = 000

## Underline Start Exception

To change:	
1.	<input type="checkbox"/> M <input type="checkbox"/> N
2.	<input type="checkbox"/> H <input type="checkbox"/>
3.	c
4.	new entry
5.	<input type="checkbox"/> - <input type="checkbox"/> M <input type="checkbox"/> N

Refer to page 11 for full instructions on Exception Codes.

This menu selection and the next one – Underline End Exception – have been allocated for underline facility because we have assumed that most people wish to be able to underline. However, in theory there is no reason why you may not use this menu item, and the next one, for other facilities – it is up to you!

Once set up, the implementing command is ☐ Y (the display shows   ), and this will **ACTIVATE** the printer to underline all subsequent texts **UNTIL** the underline end code is used.

U.L. X EC1 = 000
U.L. X EC2 = 000
U.L. X EC3 = 000

## Underline End Exception

To change:	
1.	<input type="checkbox"/> M <input type="checkbox"/> N
2.	<input type="checkbox"/> H <input type="checkbox"/> D
3.	c
4.	new entry
5.	<input type="checkbox"/> - <input type="checkbox"/> M <input type="checkbox"/> N

Refer to page 11 for full instructions on Exception Codes.

Once set up, the implementing command is ☐ Y (the display shows   ) – the same as for underline start exception – and this will **STOP** the printer underlining the text from that point on.



G.P. X1 C1 = 000
G.P. X1 C2 = 000
G.P. X1 C3 = 000

## General Purpose Exception 1

To change:		
1.	<input type="text" value="M"/>	<input type="text" value="N"/>
2.	<input type="text" value="H"/>	<input type="text" value="Y"/>
3.	c	
4.	new entry	
5.	<input type="text" value=""/> - <input type="text" value="M"/> <input type="text" value="N"/>	

Refer to page 11 for full instructions on Exception Codes.

This is a general purpose facility. Once set up, the implementing command is  (this shows  $\lambda$  on the display).

G.P. X2 C1 = 000
G.P. X2 C2 = 000
G.P. X2 C3 = 000

## General Purpose Exception 2

To change:		
1.	<input type="text" value="M"/>	<input type="text" value="N"/>
2.	<input type="text" value="H"/>	<input type="text" value="W"/>
3.	c	
4.	new entry	
5.	<input type="text" value=""/> - <input type="text" value="M"/> <input type="text" value="N"/>	

Refer to page 11 for full instructions on Exception Codes.

This is a general purpose facility. Once set up, the implementing command is  (this shows  $\lambda$  on the display).

Below is an example of the codes we used to cause a well known brand of printer to start and stop bold printing by using the general purpose exceptions 1 and 2.

Please remember, however, that YOUR printer will probably be different - and of course you may not even wish to use bold print, you may wish to use any number of other possible options your printer probably gives you.

First we looked up the ASCII codes in the printer manuals. These read:

To start bold print, ASCII Codes ESC and (

To stop bold print, ASCII Codes ESC and )

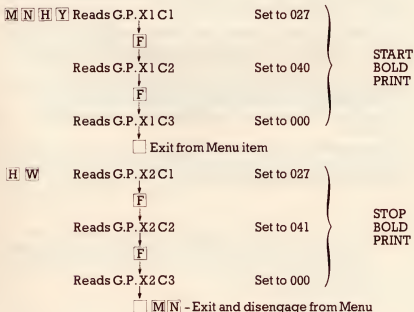
Using our chart on page 12, these codes translated as follows:

ESC = 27

( = 40

) = 41

So the menus were set up as follows:



Now it is set up in this fashion we can enable bold printing in our text by preceding the piece of text we wish to be in bold print with **P C** and we can stop it by using **P L** after the relevant piece of text.

Of course, if you are using Underline Start and End Exceptions with the example above the implementing code is **Y** for both. Successive use of this command will cause the Microwriter to switch alternately between the two Underline Exceptions.

UL REPEAT = 000

## Underline Repeat Enable

To change:		
1.	<input type="checkbox"/> M	<input type="checkbox"/> N
2.	<input type="checkbox"/> Y	<input type="checkbox"/> R <input type="checkbox"/> F
3.	c	
4.	new entry	
5.	<input type="checkbox"/> -	<input type="checkbox"/> M <input type="checkbox"/> N

Some printers are incapable of underscoring continuously (the facility for which is described on pages 11 and 13).

As an alternative they backspace and underline each character one by one. For this they have two or three codes which need to be set in the 'Underline Start Exception' (☐ H ☐ ) as if for normal underscoring.

Once the underline start exception menu has been set, then this menu item can be used to 'address' it for the underline repeat facility.

000 is the default value and will not activate the Underline Start Exception.

001 will activate the Underline Start Exception.

Once all this is set, ☐ Y used at the relevant points in your text will start and stop underlining as normal.

**Note** We have found that the majority of printers respond to the following settings for underline repeat – though this does not mean that ALL printers will do so. You may need to look up different codes on page 12.

U.L. X SC1 = 008

U.L. X SC2 = 095

U.L. X SC3 = 000

LF X ENAB. = 000

## Line Feed Exception Enable

To change:		
1.	<input type="checkbox"/> M	<input type="checkbox"/> N
2.	<input type="checkbox"/> Y	<input type="checkbox"/> D
3.	c	
4.	new entry	
5.	<input type="checkbox"/> -	<input type="checkbox"/> M <input type="checkbox"/> N

Some printers, when commanded to action special facilities such as bold print for the whole of the document, need a command at the beginning of every single line. This can, of course, be very tedious.

The Line Feed Exception enable/disable facility is designed to get around this problem.

000 - is the default and disables this facility.

001 - This enables this facility. It means that at every carriage return (hard or soft) the Microwriter will send out a carriage return code, a line feed code AND WHICHEVER CODES ARE STORED IN GENERAL PURPOSE EXCEPTION 1 (Page 14).

Therefore, once set up with the relevant codes (see chart page 12) then the General Purpose Exception 1 will be referred to at every carriage return. Consequently, the implementing code ☐ P ☐ C is not needed as it is being triggered automatically.

# MENU ITEMS – COMMUNICATIONS

A number of the menu items available govern the ability of the Microwriter to communicate to other equipment.

The default values for these items have been set to correspond with most standard settings.

Once set, given that you don't change printer (or whatever) you need not worry about playing around with these settings. You should have a card provided by your Local Microwriting Centre summarising any changes (from the normal settings) your Microwriter may have been set up with to communicate with your printer.

However, your Microwriter is a VERY flexible piece of equipment and can 'interface' with most types of equipment with RS232C communication facilities (see page 28 for Microwriter RS232C format). So if you look in the manuals of most other pieces of equipment you should be able to set your Microwriter to communicate with them.

Use the Hex /ASCII/Decimal chart on page 12 where necessary.

For further information on communications see pages 26 onwards.

LF CODE = 010
---------------

## Line Feed Code

To change:		
1.	<input type="checkbox"/> M	<input type="checkbox"/> N
2.	<input type="checkbox"/> Y	<input type="checkbox"/> K
3.	c	
4.	new entry	
5.	<input type="checkbox"/> -	<input type="checkbox"/> M <input type="checkbox"/> N

The normal default value of 010 means that a line feed will be transmitted with each carriage return.

If you need to send another code refer to the chart on page 12. An entry of 000 will disable the line feed transmission and send only the carriage returns.

HARD CR = 013

## Hard Carriage Return Code

To change:		
1.	<input type="checkbox"/> M	<input type="checkbox"/> N
2.	<input type="checkbox"/> Y	<input type="checkbox"/>
3.	c	
4.	new entry	
5.	<input type="checkbox"/> -	<input type="checkbox"/> M <input type="checkbox"/> N

The default value of 013 is the standard hard carriage return code, but the menu may be adjusted (using the table on page 12) to transmit an alternative code if necessary.

SOFT CR = 013

## Soft Carriage Return Code

To change:		
1.	<input type="checkbox"/> M	<input type="checkbox"/> N
2.	<input type="checkbox"/> Y	<input type="checkbox"/> I
3.	c	
4.	new entry	
5.	<input type="checkbox"/> -	<input type="checkbox"/> M <input type="checkbox"/> N

The default value of 013 is the standard soft carriage return code, but the menu may be adjusted (see table on page 12) to transmit an alternative code if necessary.

B.S. CODE = 008

## Backspace Code

To change:		
1.	<input type="checkbox"/> M	<input type="checkbox"/> N
2.	<input type="checkbox"/> Y	<input type="checkbox"/> ' /
3.	c	
4.	new entry	
5.	<input type="checkbox"/> -	<input type="checkbox"/> M <input type="checkbox"/> N

The default value of 008 is the standard backspace code, but the menu may be adjusted (see table on page 12) to transmit an alternative code if necessary.

**Note** This facility is necessary if you wish the Microwriter to be fully 'interactive' with other printers when used as an alternative keyboard (see page 27). However, not all printers have this facility.

UP LN CODE = 011

## Up Line Code

To change:		
1.	<input type="checkbox"/> M	<input type="checkbox"/> N
2.	<input type="checkbox"/> H	<input type="checkbox"/> ' /
3.	c	
4.	new entry	
5.	<input type="checkbox"/> -	<input type="checkbox"/> M <input type="checkbox"/> N

Normally this menu item is set to 011 and will not send any code.

Some printers, however, need to receive a code, so look up the table on page 12, and enter the relevant number.

When set up, this menu item will respond to the carriage return ☐ C in normal text.

BAUD RATE = 019

## Baud Rate Setting

To change:		
1.	<input type="checkbox"/> M	<input type="checkbox"/> N
2.	<input type="checkbox"/> Y	<input type="checkbox"/> R
3.	c	
4.	new entry	
5.	<input type="checkbox"/> -	<input type="checkbox"/> M <input type="checkbox"/> N

The baud rate is the SPEED at which the text is transferred across from one piece of equipment to another. The default in the Microwriter is for 1200 baud.

Other possible standard entries are:

Baud	Entry
110	231
150	169
300	83
600	41
1200	19
2400	9
4800	3

If you wish to calculate non-standard baud rates, the formula used is:

$$N = \frac{t-84.6}{39} \text{ where } t = \frac{1,000,000}{\text{baud rate}}$$

Then round to the nearest unit.

Note: For small values of "N", inaccuracies will occur.



TX FRAME = 000

## Bit Format of Serial Output

To change:	
1.	<input type="checkbox"/> M <input type="checkbox"/> N
2.	<input type="checkbox"/> Y <input type="checkbox"/> F
3.	c
4.	new entry
5.	<input type="checkbox"/> - <input type="checkbox"/> M <input type="checkbox"/> N

This menu item governs the format in which the data is sent to the receiving equipment.

There are three possible settings only, each pre-programmed with a format. The default is 000.

000 = 8 data bits, No parity bit, 1 Stop bit

001 = 7 data bits, No parity bit, 2 Stop bits

002 = 7 data bits, 1 parity bit, 2 Stop bits

If set at 002, where you are asking the Microwriter to send a parity bit, it will refer to menu setting ☐ Y ☐ P (Odd or Even Parity) to determine how this should be sent. This setting is described below.

PARITY O/E = 000

## Odd/Even Parity

To change:	
1.	<input type="checkbox"/> M <input type="checkbox"/> N
2.	<input type="checkbox"/> Y <input type="checkbox"/> P
3.	c
4.	new entry
5.	<input type="checkbox"/> - <input type="checkbox"/> M <input type="checkbox"/> N

This setting determines whether an Odd or Even parity bit should be sent (if required to in menu setting ☐ Y ☐ F - see above).

000 = Odd Parity

001 = Even Parity

## Receive Wait Time

To change:	
1.	<input type="checkbox"/> M <input type="checkbox"/> N
2.	<input type="checkbox"/> Y <input type="checkbox"/> L <input type="checkbox"/> F
3.	c
4.	new entry
5.	<input type="checkbox"/> - <input type="checkbox"/> M <input type="checkbox"/> N

This menu item is only required when and if you intend to receive text from other equipment (in which case you also need to enable the input facility - see page 26).

When two pieces of equipment are 'talking' to each other via a common lead they are constantly checking to see if the other equipment is trying to send to them so as not to interrupt their own transmission. The number in the menu setting will determine how often and how fast these checks are made.

008 is the default value and is the minimum delay needed by the Microwriter to receive text.

255 is the maximum delay possible and should be suitable for all pieces of equipment. However, there is a penalty to pay for leaving this high setting! The battery drain is increased and can mean you need to charge your Microwriter twice as often. Therefore, the best way of finding out the optimum level is to experiment, starting at 255 and going down to a figure that still allows transmission both ways without corrupting or missing text. Further explanation of this can be found on page 28.

**Important:** If you intend to receive text, make sure that you are just before blank memory or else your text will be overwritten.

CONT. H EN. = 000

## ASCII Setting Enable

To change:		
1.	<input type="checkbox"/> M	<input type="checkbox"/> N
2.	<input type="checkbox"/> Y	<input type="checkbox"/> H
3.	c	
4.	new entry	
5.	<input type="checkbox"/> -	<input type="checkbox"/> M <input type="checkbox"/> N

This menu setting refers to the fourth register (see page 5) which will allow access to the ASCII control character set from the keyboard. This register is deliberately kept unavailable for regular use, as accidental use of control characters could 'upset' the operations of other equipment.

000 = Disable 4th Register

001 = Enable 4th Register

TAPE ERROR = 000

## Tape Transmission Check

To change:		
1.	<input type="checkbox"/> M	<input type="checkbox"/> N
2.	<input type="checkbox"/> Y	<input type="checkbox"/> F
3.	c	
4.	new entry	
5.	<input type="checkbox"/> -	<input type="checkbox"/> M <input type="checkbox"/> N

This is not normally a menu item you need to look at for 'it's own sake' - though you may want to cancel it to 000.

It will be displayed automatically when you have finished receiving text from a tape recording. From it you can see whether a good transmission was made. (See Book I and page 3 of this Book for more information).

# LOADING DEFAULT VALUES

If at any stage you need to reset all the menu items to their default values, the command **M N Y W** can be used. You may wish to do this for two reasons:

1. If your Microwriter is set with a number of complicated settings you may wish to reset them all to the default values in order to have a starting base from which to interface with an alternative piece of equipment, and
2. If for some reason you are having problems with your menu items it is a quick, easy way of 'trouble-shooting'.

Covering the second possibility is also a command to reset all the tab and margin slot values to every 5 characters - this is **M N P D**.

**USE THESE COMMANDS WITH CAUTION - YOU MAY NOT WISH TO RESET ALL OF THESE VALUES.**

**Note** If you are already engaged in a menu (having keyed **M N**) then you just need **Y W** to reset the values, and then disengage from the menu in the normal way.

# MICROWRITER'S INPUT/OUTPUT SOCKET

The Microwriter uses the 25 way RS232C socket at the front in a number of ways:

To send blocks of text (i.e. a document) to other equipment.

When being used attached to other equipment as an alternative input keyboard.

When connected to a TV or monitor using the TV interface.

When receiving texts from other equipment.

And it can send information in the RS232C mode in single line or double line spacing.

Because of these factors the Microwriter has the facility to allow the user to inspect the 'status' of the input/output port at any time by using the command ☐ ☐ I.

☐ ☐ I - Inspect status

This will display I.O. STATUS = ABCD (where these letters equal either 0 or 1).

Each digit represents a switch as follows:

- |               |                      |                   |
|---------------|----------------------|-------------------|
| (A) 1st digit | 0 = Receive Disable  | 1 = Enable        |
| (B) 2nd digit | 0 = Transmit Disable | 1 = Enable        |
| (C) 3rd digit | 0 = TV Enable        | 1 = RS232C Enable |
| (D) 4th digit | 0 = Single Line      | 1 = Double Line   |

Each of these setting indicators has a sequence of commands which will alternate them between 0 and 1. They are as follows:

- |   |                                 |
|---|---------------------------------|
| (A) <input type="checkbox"/> M <input type="checkbox"/> N <input type="checkbox"/> P <input type="checkbox"/> X | Receive disable/enable          |
| (B) <input type="checkbox"/> M <input type="checkbox"/> N <input type="checkbox"/> Y <input type="checkbox"/> X | Transmit disable/enable         |
| (C) <input type="checkbox"/> <input type="checkbox"/> P   | TV Interface/RS232C switch      |
| (D) <input type="checkbox"/> M <input type="checkbox"/> N <input type="checkbox"/> <input type="checkbox"/> X   | Single line/double line spacing |

Each of these commands will change the status from 0 to 1 or vice versa and at the same time show the result by displaying the status.

To go back into your text hit ☐ and for those items that are prefixed by ☐ M ☐ N you will also need to disengage by using another ☐ M ☐ N (as for menu settings).

continued

The chart below shows all the possible variables and what they mean:

<b>0000</b> Won't receive Won't output Won't display to TV Single line on print	<b>0001</b> Won't receive Won't output Will not display to TV Double line on print	<b>0010</b> Won't receive Won't output Fast text access mode Single line on print	<b>0011</b> Won't receive Won't output Fast text access mode Double line on print
<b>0100</b> Won't receive Will output to TV Will display to TV Single line on print	<b>0101</b> Won't receive Will output to TV Will display to TV Double line on print	<b>0110</b> Won't receive Will output interactively Will not display to TV Single line on print	<b>0111</b> Won't receive Will output interactively Won't display to TV Double line on print
<b>1000</b> Will receive Won't output Won't display to TV Single line on print	<b>1001</b> Will receive Won't output Will not display to TV Double line on print	<b>1010</b> Will receive Won't output Fast text access mode Single line on print	<b>1011</b> Will receive Won't output Fast text access mode Double line on print
<b>1100</b> Will receive Will output to TV Will display to TV Single line on print	<b>1101</b> Will receive Will output to TV Will display to TV Double line on print	<b>1110</b> Will receive Will output interactively Won't display to TV Single line on print	<b>1111</b> Will receive Will output interactively Won't display to TV Double line on print

**Notes** PRINTING always overrides any status setting, so that ☒ will simply print and then it will automatically return to the original status setting.

For most users it is only necessary to remember that before using the TV Interface it is necessary to be in the correct mode using ☐ ☒ (this was dealt with on pages 23 and 27 in Book 1). When selecting TV mode the Transmit Enable is AUTOMATICALLY set.

The Microwriter can be used in TV mode while disconnected from the TV but in that case the Microwriter will react VERY SLOWLY to the text access commands. Either halt the text access command and depress ☐ ☒ or switch the Microwriter off and on again - this will automatically re-set it to the 'fast' mode.

As long as the digits 'B' and 'C' are set to 1, you can also use the Microwriter as an alternative keyboard when linked to other equipment (though in some cases the backspace code will need altering, see page 20).

To use the Microwriter to receive text and echo back to the connected device, it will be necessary to set digits 'A', 'B' and 'C' to 1. When receiving text you may also need to refer to the RX WAIT T menu setting on page 23. Sometimes one can get spurious characters registering across from the host equipment, therefore, unless you definitely want to receive text, it is advisable to disable this facility.

# RS232C COMMUNICATIONS WITH THE MICROWRITER

The Microwriter behaves as the host system (i.e. it is in command of the communications to and from the 'terminal' - be it a printer, word processor, computer, etc.).

The Microwriter sends data out on pin 3 of the 25-way D-type plug and receives data on pin 2. The Microwriter sets the DTR, DSR, DCD and RTS lines to a high level when printing with X (This is not the case for the character by character transmission. In this instance, the DTR, DSR and DCD are set high. However, the RTS line will go high and low under the control of the Microwriter if the receive facility is enabled). If the receive facility is disabled and the output facility is enabled the RTS line will be held low. For a character to be output in this mode the RTS line which comes from the device to which you are communicating needs to be set high as well. If it is set low the Microwriter will consider the device to be busy and will wait until it is set high. (The CTS requirements are the same for printing).

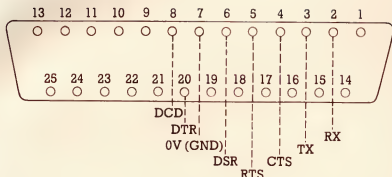
When the Microwriter is in the receive mode it operates as follows:

The Microwriter will send out an RTS (request to send) signal for a set period of time. During this time the Microwriter is looking on its receive line for data. If no data is found it will go into an 'idle' state and power down for 7 milli-seconds (7ms). During this power down state no data should be sent as there is no RTS signal from the Microwriter. After 7ms the cycle is repeated and another RTS is sent out from the Microwriter.

If the response time of the 'sender' is longer than the time that the RTS line is high for, the relevant menu setting has to be altered to allow the Microwriter to communicate with even the slowest of equipment. The time duration of the RTS signal can be set from 19.5 micro-seconds to 5 milli-seconds (see page 23).

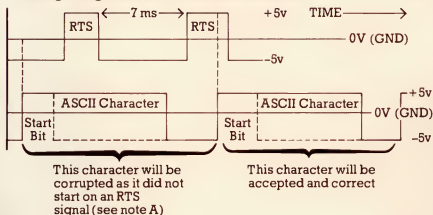
It should be noted that when the Microwriter is sending data out as a block (i.e. when an entire document is being transmitted at once) then the RTS line is set high and the power down cycle is not implemented. The function of the RTS line becomes apparent when using the Microwriter as a terminal. The RTS line is set high for the duration cycle to monitor the input line for incoming data during a character by character output.

## The RS232C Connector



## Timing Diagrams for Communications

(Not to scale)



**Note A** This character will normally not be sent as there was no RTS signal on the line to initiate the transmission.

The data format can be selected to suit the terminal or machine with which the Microwriter is communicating. The TX Frame menu will allow the data format to be altered (see page 22) and the Parity O/E menu will allow the selection of odd/even or no parity (see page 22).



Your local Microwriting Centre